

ABSTRACT

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A method for removing a first sorbate having a first desorption activation energy and a second sorbate having a second desorption activation energy from a sorbent, involves a two-stage desorber. In a first stage, the first sorbate, second sorbate and the sorbent are contacted with a stripping fluid having a first temperature sufficient to separate the first sorbate in a vapor phase from the sorbent. In a second stage, the second sorbate and the sorbent is heated to a second temperature higher than the first temperature to separate the second sorbate in a vapor phase from the sorbent. The second sorbate can then be condensed to a liquid phase and sold to offset the costs of the process. Heating in the second phase can be facilitated by the introduction of microwave or infrared energy for stripping the second sorbate from the sorbent. Use of the microwave or infrared energy can be facilitated with a purging gas which can also be heated to function as a stripping gas. An associated apparatus includes two desorption chambers or alternatively a single desorption chamber for use in both stages.